

TRANSFORMATIONS

Name _____

Date _____ Block _____

A

$$y = 4x^2$$

$a=4$ vertical stretch

$$y = 0.8 \ln x$$

$a=0.8$ vert shrink

$$y = -5e^x$$

$a=-5$ reflect over x-axis
+ vert stretch

$$y = \frac{1}{2} x^3$$

$a=\frac{1}{2}$ vertical shrink

$$y = -2\sqrt{x}$$

$a=-2$ reflect over x-axis
+ vert. stretch

$$y = -0.2 |x|$$

$a=-0.2$ reflect over x-axis
+ vert shrink

$$y = 3 \sin x$$

$a=3$ vertical stretch

$$y = -\frac{1}{3} x$$

$a=-\frac{1}{3}$ reflect over x-axis
+ vert shrink

$$y = \frac{6}{x}$$

$a=6$ vertical stretch

B

$$y = \sqrt{5x}$$

$b=5$ horizontal shrink

$$y = \ln(0.2x)$$

$b=0.2$ horizontal stretch

$$y = \frac{1}{6x}$$

$b=6$ horiz. shrink

$$y = e^{0.7x}$$

$b=0.7$ horizontal stretch

$$y = (-2x)^3$$

$b=-2$ reflect over y-axis
horiz. shrink

$$y = \sqrt{-x}$$

$b=-1$ reflect over y-axis

$$y = 13x|$$

$b=3$ horizontal shrink

$$y = \sin(4x)$$

$b=4$ horiz. shrink

$$y = (-\frac{1}{2}x)^2$$

$b=-\frac{1}{2}$ reflect over y-axis
+ horiz stretch

C

$$y = (x+3)^2$$

$c=-3$ shift left 3

$$y = |x-2|$$

$c=2$ shift right 2

$$y = \frac{1}{x+1}$$

$c=-1$ shift left 1

$$y = \sqrt{x+4}$$

$c=-4$ shift left 4

$$y = (x-6)^3$$

$c=6$ shift right 6

$$y = e^{x-1}$$

$c=1$ shift right 1

$$y = \sin(x + \pi/2)$$

$c=-\pi/2$ shift left $\pi/2$

$$y = (x-4)^2$$

$c=4$ shift right 4

D

$$y = x+6$$

$d=6$ shift up 6

$$y = x^2 - 3$$

$d=-3$ shift down 3

$$y = x^3 + 2$$

$d=2$ shift up 2

$$y = \sqrt{x} - 4$$

$d=-4$ shift down 4

$$y = \frac{1}{x} + 4$$

$d=4$ shift up 4

$$y = |x| - 10$$

$d=-10$ shift down 10

$$y = \sin x + 5$$

$d=5$ shift up 5

$$y = \ln x - 7$$

$d=-7$ shift down 7

$$y = e^x + 1$$

$d=1$ shift up 1

TRANSFORMATIONS - Create Equations

MIXED PRACTICE

Name _____
Date _____ Block _____

For each, give the non-trivial values of a, b, c and/or d
AND describe how each transforms the graph.

1) $y = 4(x-1)^2 + 3$
 $a=4$ vert stretch
 $c=1$ shift right 1
 $d=3$ shift up 3

2) $y = 0.4 \sin(2x)$
 $a=0.4$ vert shrink
 $b=2$ horiz shrink

3) $f(x) = e^{3(x-1)}$
 $b=3$ horiz shrink
 $c=1$ shift right 1

4) $f(x) = \ln(x+2) - 4$
 $c=-2$ shift left 2
 $d=-4$ shift down 4

5) $g(x) = \frac{3}{x-4} + 1$
 $a=3$ vert stretch
 $c=4$ shift right 4
 $d=1$ shift up 1

6) $h(x) = -5\sqrt{x} + 6$
 $a=-5$ reflect over x -axis + vert stretch
 $d=6$ shift up 6

7) $y = -\frac{1}{3}(x+6)^3$
 $a=-\frac{1}{3}$ reflect over x -axis + vert shrink
 $c=-6$ shift left 6

8) $f(x) = -2|x-4|$
 $a=-2$ reflect over x -axis + vert. stretch
 $c=4$ shift right 4

9) $g(x) = \frac{1}{4}x + 2$
 $a=\frac{1}{4}$ vert. shrink
 $d=2$ shift up 2

10) $h(x) = -x - 6$
 $a=-1$ reflect over x -axis
 $d=-6$ shift down 6

11) $k(x) = \sqrt{-x} + 4$
 $b=-1$ reflect over y -axis
 $d=4$ shift up 4

12) $y = |3x| + 1$
 $b=3$ horiz shrink
 $d=1$ shift up 1

13) $y = \frac{1}{0.4x} - 3$
 $b=0.4$ horiz stretch
 $d=-3$ shift down 3

14) $M(x) = -2(x+4)^2 + 3$
 $a=-2$ reflect over x -axis + vert stretch
 $c=-4$ shift left 4
 $d=3$ shift up 3

15) $y = 2e^{-x} - 6$
 $a=2$ vert stretch
 $b=-1$ reflect over y -axis
 $d=-6$ shift down 6

16) $f(x) = 5 \sin(\frac{1}{2}(x-90)) - 3$
 $a=5$ vert stretch
 $b=\frac{1}{2}$ horiz. stretch
 $c=90$ shift right 90
 $d=-3$ shift down 3